

## CLAIMS

1. A device that is placed in a vessel for carrying out separate injection of two fluids in two different physical states, or which are not miscible, and for homogeneous distribution in the vessel of at least one of the two fluids downstream of said device, the first fluid being injected into the vessel at at least one point level with said device, said device being characterized in that it comprises a chamber (5) pierced by orifices (7, 8) for the passage of the first fluid, said chamber (5) also being imperviously traversed by tubes (4) or conduits with a free end acting as a passage for the second fluid through said vessel.
2. A device according to claim 1, characterized in that said vessel is a distillation column in which the first fluid is essentially liquid and the second fluid is essentially gaseous, and in that said essentially gaseous fluid traverses said device from downstream to upstream via said conduits in said column, and in that the flow of the essentially gaseous fluid is upwards and the flow of essentially liquid fluid is downwards.
3. A device according to claim 1, characterized in that said vessel is a reactor in which at least one bed of granular solid (12) is disposed downstream of said device and in that the flows of the two fluids are downwards and co-current, and in that the second fluid is injected into the vessel at at least one point upstream of said device.
4. A device according to claim 3, in which the first fluid is essentially liquid and the second fluid is essentially gaseous.
5. A device according to any one of the preceding claims, characterized in that said device is placed close to the head of said vessel.
6. A device according to any one of the preceding claims, characterized in that said chamber is supplied by injecting the first fluid substantially radially with respect to the principal axis of the vessel and at at least one point located level with said device.
7. A device according to any one of claims 3 to 6, characterized in that the second fluid is injected substantially along the principal axis of the vessel.

8. A device according to any one of the preceding claims, characterized in that the tubes (4) extend below the chamber (5) by a distance  $h_i$  (10).
9. A device according to claim 8, in which said distance  $h_i$  (10) is in the range 1 to 100 mm.
10. A device according to any one of claims 3 to 9, in which the distance between the end (13) of the tubes (4) and the top of the bed (12) is in the range 0 to about 50 mm, 0 excluded.
11. A device according to any one of the preceding claims, in which said orifices allowing passage of the first fluid are holes distributed between the tubes for injecting the second fluid.
12. A device according to any one of claims 1 to 10, in which said orifices for passage of the first fluid are annular slots located around the tubes for injecting the second fluid.
13. Use of a device as defined in any one of claims 1 to 12, in which said vessel is a reactor and at least one bed of granular solid is disposed downstream of said device, for carrying out hydrocracking, hydrotreatment, hydrodesulphurisation, hydrodenitrogenation, selective or complete hydrogenation of  $C_2$  to  $C_5$  cuts, selective hydrogenation of steam cracked gasoline, hydrogenation of aromatic compounds in aliphatic and/or naphthenic cuts, hydrogenation of olefins in aromatic cuts, partial or complete oxidation reactions, amination, acetyloxidation, ammoxidation or halogenation reactions, in particular chlorination.
14. Use of a device as described in any one of claims 1 to 12 in a distillation column.